

10/517417

DT05 Rec'd PCT/PTO 08 DEC 2004

VERIFICATION OF TRANSLATION

I, DAVID CLAYBERG

of 948 15th St., Ste. 4
Santa Monica, CA 90403-3134

declare that I am a professional translator well acquainted with both the German and English languages, and that the attached is an accurate translation, to the best of my knowledge and ability, of the accompanying German document.

Signature



David Clayberg

Date

12/07/2004

Dust-Collecting Receptacle For a Hand Machine Tool

5 Prior Art

The invention is based on a dust-collecting receptacle for a hand machine tool, in particular an electric hand grinder, according to the preamble to claim 1.

10 In electric hand grinders, grinding dust is collected in cloth bags, paper bags, or boxes, which have a protruding intake fitting that is fitted onto a dust output fitting on the machine housing. Whereas the paper bags and cloth bags are designed to be expendables that are discarded along with the dust that has been collected, the boxes have a dust-collecting chamber that can be emptied
15 once the box is opened, which allows the dust-collecting receptacle to be reused. The inlet fitting feeds into the dust-collecting chamber and the dust-collecting chamber communicates with an exhaust opening preceded by a dust filter. In the working position of the electric hand grinder, the inlet fitting, the dust-collecting chamber, the filter, and the exhaust opening are situated one after
20 another in spatial sequence.

Advantages of the Invention

25 The dust-collecting receptacle according to the present invention, with the characteristics of claim 1, has the advantage that the integration of the inlet fitting into the dust-collecting receptacle itself and the spatial placement of the inlet fitting, the dust-collecting chamber, the filter, and the exhaust opening one above the other in the working position of the electric hand grinder achieves a compact embodiment of the dust-collecting receptacle with a short structural
30 length and high dust-collecting efficiency. At the same time, the concealed placement of the inlet fitting makes it possible to produce a more attractive dust-

collecting receptacle whose outer contours can be adapted to the machine housing in an optimally designed manner.

Advantageous modifications and improvements of the dust-collecting
5 receptacle according to claim 1 are possible by means of the measures taken in
the remaining claims.

According to a preferred embodiment of the invention, the mouth of the
inlet fitting is located close to the rear delimiting wall of the dust-collecting
10 chamber, at the end facing away from the connecting opening of the inlet fitting
and is situated there so that the axis of the mouth is oriented toward the
delimiting wall. Because of this structural measure, the dust advantageously
enters into the dust-collecting chamber at its rear delimiting wall and is evenly
distributed throughout the dust-collecting chamber by the flow of air. The
15 uniformity of the dust distribution is further improved in that, according to a
preferred embodiment form of the invention, the exhaust opening and the
preceding dust filter extend across the entire top of the dust-collecting chamber.

According to a preferred embodiment of the invention, the dust-collecting
20 chamber is enclosed by a box-like housing that is open at the top and a cover
that seals the housing and can be removed from it. The inlet fitting is integrated
into the housing bottom and the exhaust opening is situated in the cover. The
dust filter is attached to the underside of the cover, preferably by means of
ultrasonic welding, and the dust filter is preferably embodied as a folded filter.
25 The inlet fitting is conical and tapers from the connecting opening to the mouth,
which has a positive impact on the air speed in the inlet fitting and on the
associated transportation of dust.

According to an advantageous embodiment of the invention, locking
30 hooks are provided to engage in corresponding locking recesses in the machine
housing. These locking hooks are preferably injection molded in one piece onto

the side walls of the housing and protrude out from its end surface oriented toward the machine housing. This structural measure permits the dust-collecting receptacle to be quickly and conveniently detached from and reattached to the machine housing again by means of a simple locking action. Elastic sealing 5 rings, which are situated between the inlet fitting of the dust-collecting receptacle and the dust output fitting of the machine housing, provide a reliable dust seal for the dust-collecting receptacle.

According to an advantageous embodiment of the invention, the cover 10 has an elastic edge with an air-sealing function, which can be placed onto the housing. As a result, the cover supporting the dust filter seals the housing in a dust-tight fashion and can be easily removed from the housing in order to empty the dust-collecting chamber and then be reattached to the housing.

15 Drawings

The invention will be explained in greater detail below in conjunction with an exemplary embodiment shown in the drawings.

20 Fig. 1 is a partially sectional side view of an electric hand grinder with a dust-collecting receptacle attached,

Fig. 2 is a longitudinal section through the dust-collecting receptacle along the cutting line II – II in Fig. 5,

25 Fig. 3 is a perspective top view of a cover of the dust-collecting receptacle according to Figs. 1 and 2,

30 Fig. 4 is a perspective top view of a housing of the dust-collecting receptacle according to Figs. 1 and 2 that can be closed by the cover according to Fig. 3, and

Fig. 5 shows a view of the housing in the direction of the arrow V in Fig. 4.

Description of the Exemplary Embodiment

5

The eccentric grinder, a side view of which is shown in Fig. 1 as an exemplary embodiment for an electric hand grinder, has a machine housing 11 whose underside is provided with a backing pad 12 that can be equipped with an abrasive disk and driven to rotate. The grinding dust produced during grinding is 10 sucked through the backing pad 12 by a fan, not shown here, mounted on the drive shaft of the backing pad 12 and is blown out via a dust output fitting 13 that is formed in one piece onto the machine housing 11. A dust-collecting receptacle 14 is slid in a dust-tight fashion onto the dust output fitting 13.

15

The dust-collecting receptacle 14 detachably fastened to the machine housing 11 – which receptacle is shown a partial side view in Fig. 1, a longitudinal section in Fig. 2, and detailed views in Figs. 3 to 5 – has a box-like housing 15 (Fig. 4) that is open at the top and a cover 16 (Fig. 3), which can be placed onto the housing 15, seals the housing 15 in a dust-tight and air-tight 20 fashion and, together with the housing 15, encloses a dust-collecting chamber 17. The cover 16 is provided with an exhaust opening 18 that is covered by a louvered grating 19. When the cover 16 is placed onto the housing 15, the exhaust opening and louvered grating 19 extend over virtually the entire open top 25 of the housing 15. To produce a dust seal, the cover 16 has an elastic edge 161 extending around the outside that has an approximately U-shaped profile and is pressed against the edge of the circumferential end of the housing 15 (Fig. 1).

30

As is clear from Figs. 1 and 2, a dust filter 20 is attached to the underside of the cover 16 oriented toward the dust-collecting chamber 17. The dust filter 20 is preferably embodied as a folded filter and is attached to the cover 16 by means of ultrasonic welding. An inlet fitting 21 is integrated into the bottom of

the housing 15 and has a connecting opening 22 designed to fit onto the dust output fitting 13 of the machine housing 11 and a mouth 23 oriented toward the dust-collecting chamber 17. The inlet fitting 21 is conical and tapers cross-sectionally from the connecting opening 22 to the mouth 23. The connecting opening 22 is recessed from the end wall 151 that can be placed against the machine housing 11 and the mouth 23 is situated close to rear housing wall 152 of the housing 15 at the end oriented away from the connecting opening 22, with the axis of the mouth 23 oriented toward the rear housing wall 152.

Like the cover 16, the housing 15 is manufactured of plastic using the injection molding process; the inlet fitting 21 extending along the housing bottom 153 is formed onto the housing 15 as it is being manufactured. Two locking hooks 24 (Fig. 4) are also formed in one piece onto the housing 15, which protrude from the side walls of the housing 15 beyond the front end wall 151 and can engage in correspondingly embodied locking recesses in the machine housing 11.

In order to attach the dust-collecting receptacle 14 to the machine housing 11, the cover 16 with the dust filter 20 underneath it is clamped onto the housing 15 and the complete dust-collecting receptacle 14 thus produced is slid with its bottom inlet fitting 21 onto the dust output fitting 13 of the machine housing 11 until the locking hooks 24 engage in the corresponding locking recesses in the machine housing 11. Annular seals 26, 27 situated in between the inlet fitting 21 and the dust output fitting 13 produce a dust-tight attachment of the dust-collecting receptacle 14 to the dust output fitting 13.

During operation of the electric hand grinder, the dust-laden air flow that the rotating fan in the machine housing 11 sucks through the backing pad 12 and blows out through the dust output fitting 13 is fed into the inlet fitting 21 and enters the dust-collecting chamber 17 close to the rear housing wall 152 of the housing 15. The air flow travels through the dust-collecting chamber 17 and,

passing through the dust filter 20, exits the dust-collecting receptacle 14 via the exhaust opening 18. The dust filter 20 retains the dust and the dust settles in the dust-collecting chamber 17. The large-surfaced design of the exhaust opening 18 and the location of the mouth 23 of the inlet fitting 21 assure a largely uniform 5 depositing of the dust in the dust-collecting chamber 17.

As is clear from Fig. 2, the inlet fitting 21, the dust-collecting chamber 17, the dust filter 20, and the outlet opening 18 are situated one above another in the working position of the electric hand grinder, as a result of which the dust-
10 collecting receptacle 14 is very compact and does not hinder the operation of the electric hand grinder or impair it in any other way. The dust-collecting receptacle 14 attaches to the machine housing 11 in a secure and reliable fashion thanks to the locking hooks 24 and the way that the front end wall 151 of the housing 15 is designed to rest against the machine housing 11 in a form-locked fashion when
15 the locking hooks 24 engage. If the form of the housing 15 with the cover 16 is also adapted to the outer contours of the machine housing 11, then this yields an optimally designed unit comprised of the electric hand grinder and dust-collecting receptacle 14.

20 The dust-collecting receptacle 14 described above is suitable not only for use with the electric hand grinder described, but also with any electric hand machine tool for material-removing machining of work pieces in which material is removed from the work piece as the work piece is machined. Other examples of such electric hand machine tools include electric hand planes or electric hand
25 saws.